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USER GUIDE

UGC039-0913

# LDP Pump

**Long Distance, Claw-Style Vacuum Pump**



Please record your equipment's model and serial number(s) and the date you received it in the spaces provided.

It's a good idea to record the model and serial number(s) of your equipment and the date you received it in the User Guide. Our service department uses this information, along with the manual number, to provide help for the specific equipment you installed.

Please keep this User Guide and all manuals, engineering prints and parts lists together for documentation of your equipment.

Date:

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Manual Number: UGC039-0813

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Serial Number(s):

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Model Number(s):

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# Introduction

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# Purpose of the User Guide

This User Guide describes the Conair LDP, or Long Distance Pump and explains step-by-step how to install and operate this equipment.

Before installing this product, please take a few moments to read the User Guide and review the diagrams and safety information in the instruction packet. You also should review manuals covering associated equipment in your system. This review won't take long, and it could save you valuable installation and operating time later.

## How the Guide is Organized

Symbols have been used to help organize the User Guide and call your attention to important information regarding safe installation and operation.



Symbols within triangles warn of conditions that could be hazardous to users or could damage equipment. Read and take precautions before proceeding.

- 1** Numbers indicate tasks or steps to be performed by the user.
- ◆ A diamond indicates the equipment's response to an action performed by the user.
- An open box marks items in a checklist.
- A circle marks items in a list.
- ☞ Indicates a tip. A tip is used to provide you with a suggestion that will help you with the maintenance and the operation of this equipment.
- Indicates a note. A note is used to provide additional information about the steps you are following throughout the manual.

## Your Responsibility as a User

You must be familiar with all safety procedures concerning installation, operation, and maintenance of this equipment. Responsible safety procedures include:

- Thorough review of this User Guide, paying particular attention to hazard warnings, appendices, and related diagrams.
- Thorough review of the equipment itself, with careful attention to voltage sources, intended use and warning labels.
- Thorough review of instruction manuals for associated equipment.
- Step-by-step adherence to instructions outlined in this User Guide.

# ATTENTION:

## Read This So No One Gets Hurt

We design equipment with the user's safety in mind. You can avoid the potential hazards identified on this machine by following the procedures outlined below and elsewhere in the User Guide.



### **WARNING: Improper installation, operation, or servicing may result in equipment damage or personal injury.**

This equipment should be installed, adjusted, and serviced by qualified technical personnel who are familiar with the construction, operation, and potential hazards of this type of machine.

All wiring, disconnects, and fuses should be installed by qualified electrical technicians in accordance with electrical codes in your region. Always maintain a safe ground. Do not operate the equipment at power levels other than what is specified on the machine serial tag and data plate.



### **WARNING: Voltage hazard**

This equipment is powered by three-phase alternating current, as specified on the machine serial tag and data plate.

A properly sized conductive ground wire from the incoming power supply must be connected to the chassis ground terminal inside the electrical enclosure. Improper grounding can result in severe personal injury and erratic machine operation.

Always disconnect and lock out the incoming main power source before opening the electrical enclosure or performing non-standard operating procedures, such as routine maintenance. Only qualified personnel should perform troubleshooting procedures that require access to the electrical enclosure while power is on.



## Description

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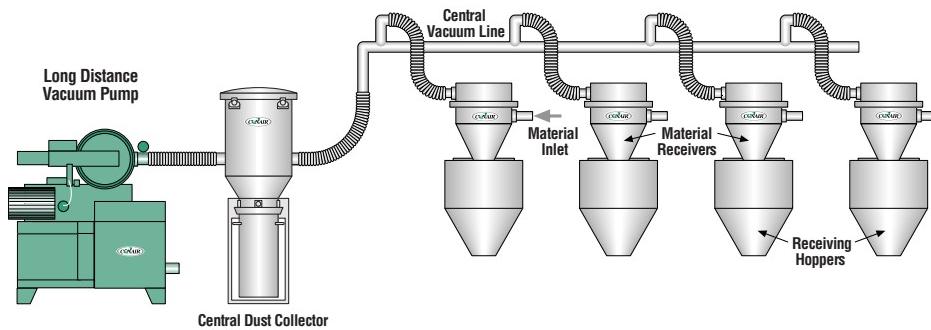
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# What is the Long Distance Pump (LDP)?

The Conair Long Distance Pump (LDP) is a positive displacement vacuum pump assembly designed specifically for providing centralized vacuum conveying power to conveying systems used for the transfer for plastic resins. Other parts of these systems include a dust collector, a quantity of vacuum receivers equipped with vacuum sequencing valves, a central (or distributed) control system, material valves, and an interconnected network of both vacuum and material conveying tubing.

## Typical Applications

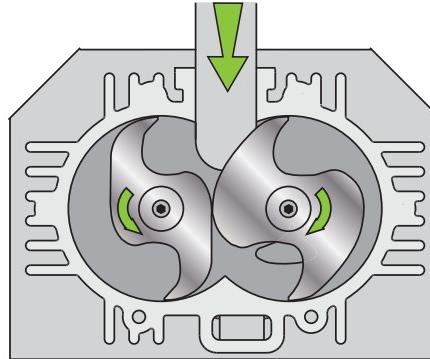
The Conair LDP is designed to provide vacuum power to connected resin receivers one at a time, in a sequenced pattern based on the need for material in the processing machines or hoppers the receivers are mounted upon.



## How the Conair LDP Works

### Principle of Operation:

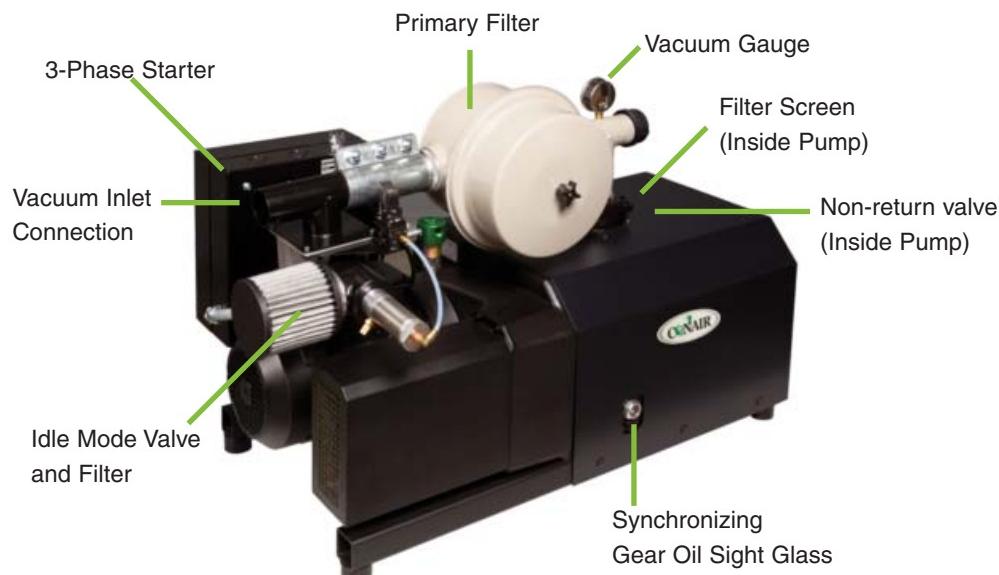
The Conair LDP pump operates on the highly efficient positive displacement claw principle. The counter-rotating claw-shaped lobes cut through the air entering its inlet and quietly, yet powerfully amplify the force of that air into a strong vacuum air stream suitable for conveying plastic materials long distances and/or at high rates. The advanced claw shape also smooths the trailing edge of the compression action, further minimizing the generation of noise. Claw pumps are dimensioned so that there is never contact between the two claws, nor between a claw and its machined housing, yet the precision gaps between these components are small enough to keep the clearance loss between the air compressing chambers low and vacuum performance high.



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# How the Conair LDP Works (continued)

## Features:

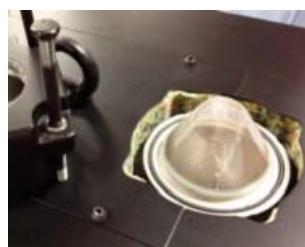
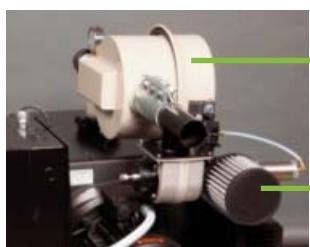


Description  
2

## Filtration

In order to avoid the suction of dust, the LDP must be installed into systems equipped with a central dust collector where dust and fines, carried over from material receivers is removed from the vacuum air stream.

In addition, the LDP pump is equipped with three (3) additional air filters. The primary pump filter (designed for regular maintenance) is a paper cartridge style, located in an easily serviced housing above the main pump housing (*see Filter Cleaning Instructions in the maintenance section of this User Guide*). The Idle Mode Valve (see description below) also contains a paper cartridge style filter, exposed to atmosphere and visible near the inlet connection of the pump (*see Filter Cleaning Instructions in the maintenance section of this User Guide*). Lastly, a back-up air filter screen is located within the vacuum inlet of the pump itself, but requires minimal attention.



**CAUTION:** Foreign objects can destroy the LDP pump. Never operate the pump without the inlet filters properly installed.

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# How the Conair LDP Works (continued)

## Electrical

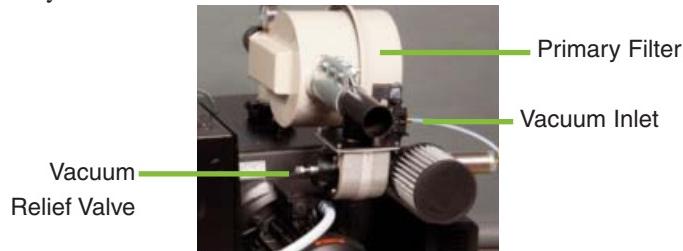
The LDP pump is equipped with a fully wired, 3-phase magnetic starter, installed on the pump assembly.

## Idle Mode Valve

The LDP is supplied with a pneumatically controlled vacuum inlet air by-pass mechanism, called an Idle Mode Valve that permits the LDP to continue running after material conveying has concluded by switching the vacuum inlet of the LDP to filtered ambient air. The idle mode valve allows the pump to run with no load for a period of time set at the conveying system control to cool the pump and avoid unnecessary shut down/start-up when conveying cycles are frequent, but not continuous.

## Vacuum Relief Valves

The LDP pump is equipped with two vacuum limiting devices that safely regulate the vacuum pressure of the pump to levels within the design parameters of the pump and for the resin conveying application the LDP pump is designed to provide. Both are spring-biased valves that are factory set for 20" of mercury. One vacuum relief valve is built into the pump mechanism, adjacent to the vacuum inlet. The second valve is part of the idle mode valve assembly, installed on the inlet to the primary filter. Any adjustment made to vacuum levels (by Conair technicians only) is done to the vacuum relief valve on the idle mode valve assembly.



**CAUTION:** These settings should never be tampered with nor adjusted, or dangerous operating levels of the LDP pump could result, including a shortened operational life of the pump and/or dangerously high vacuum levels throughout the vacuum network. Alternatively, improper adjustment could result in poor pump performance, line clogging and lack of material movement.

## Non-return Valve

In order to avoid reverse rotation when the pump turns off, the LDP is equipped with a non-return valve within the vacuum inlet.

(Continued)

# How the Conair LDP Works (continued)

## Pump Operation:

### **Oil Free Vacuum Air**

The vacuum inlet to the pump must be absolutely oil-free, and lubrication of the pump's interior chamber is neither necessary nor allowed for proper operation.

### **Vacuum Air Inlet Temperature**

Conveying air is introduced to the vacuum system through feed tubes, distribution boxes and purge valves and is drawn towards the LDP pump by the vacuum the LDP creates. If a dry air conveying configuration is used in the conveying system the vacuum air is likely to exceed the safe limit of 180°F {82°C} and the conveying air must be cooled before it enters the LDP pump. An air to water heat exchanger cooling device is a common solution, installed directly prior to the pump inlet, or prior to the system dust collector. If your system operates with elevated conveying air temperatures, IE: dry air conveying, yet is not fitted with a precooler for the air, contact Conair.

### **Cooling the LDP**

The LDP is cooled by radiation of heat from the surface of the pump, air flow from the fan of the drive motor, the conveying air passing through the pump and the fan on the shaft coupling between the motor and the pump module.

Description  
2

Contact Conair  
Customer Service  
1 800 458 1960.  
From outside of  
the United States,  
call: 814 437 6861

# Specifications:

TPCX060-0813

MODELS	LDP-6	LDP-9	LDP-11	LDP-13				
<b>Performance characteristics</b>								
Horsepower {kW}	6.4 {4.8}	9.1 {6.8}	10.7 {8}	12.7 {9.5}				
ACFM	103	165	200	277				
Average sound level {dbA}	79	79	82	83				
Vacuum inlet size inches {mm}	1.5 {38.1}	2.0 {50.8}	2.25 {57.1} or 2.5 {63.5}	2.5 {63.5} or 3.0 {76.2}				
Outlet size inch NPT	1.0	1.0	1.25	2.0				
<b>Dimensions</b> inches {mm}								
Height	30 {762}	34 {864}	34 {864}	38{965}				
Width	40 {1016}	45 {1143}	45 {1143}	52 {1321}				
Depth	25 {635}	29 {737}	29 {737}	29 {737}				
<b>Voltage Full Load Amps</b>								
190-208V / 3-phase / 50 hz	14.5	18.5	25.8	31.8				
220-230V / 3-phase / 60 hz	16.2	16.8	24.8	33.0				
380-415V / 3-phase / 50 hz	7.27	9.3	12.9	17.1				
440-460V / 3-phase / 60 hz	8.09	8.4	12.4	16.5				
575V / 3-phase / 60 hz	5.0	5.1	9.5	13.6				
<b>Compressed air*</b>								
	80-120 psi {5.5-8.2 bar}@ 1-2 ft <sup>3</sup> {28-57 liters}							
<b>SPECIFICATION NOTES</b>								
* For operation of idle mode valve.								
Specifications may change without notice. Consult with a Conair representative for the most current information.								

## Application Notes:

All conveying system pump applications should be specified and approved by Conair system engineers for optimal performance. Critical information for correct sizing must include:

- horizontal material conveying distance
- vertical material conveying distance
- number and type of material conveying elbows
- length of material conveying flex hose
- length of vacuum line
- altitude (feet above sea level) of operating location
- material(s) being conveyed and bulk density(s)
- total throughputs

## Options:

- 3-phase disconnect switch  
(Use of a 3-phase disconnect switch near the pump installation is recommended.)
- Aftercooler on dust collector
- Pump stacking stand

# Installation

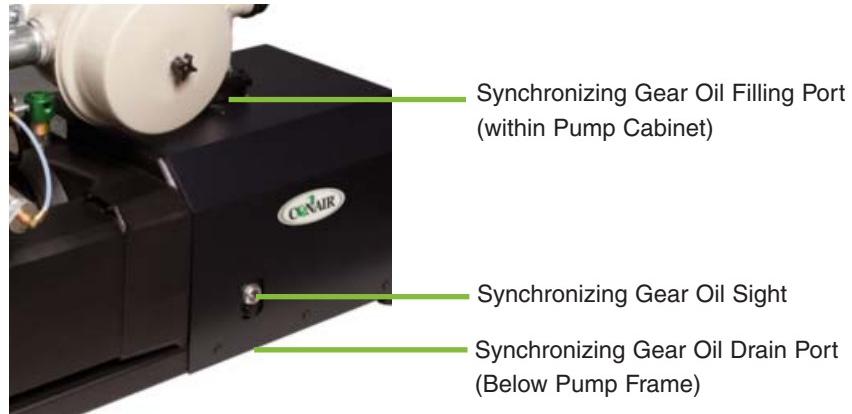
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# Preparing for Installation

The LDP Pump is easy to install if you plan the location and prepare the area properly.

- Make sure that the environment of the pump is not potentially explosive.**
- The following ambient conditions are required:**
  - ambient temperature: 32°F to 104°F {0°C to 40°C}
  - ambient pressure: 0 to 1000 feet {0 to 305 meters} above sea levelIn the event these conditions cannot be met, contact Conair engineering.
- The LDP pump must be placed/mounted horizontally and the base for placement/mounting base must be level.**
- Sufficient cooling must be accommodated by a clearance of at least three (3) feet {1 meter} between the LDP pump and nearby walls.** The installation space or location may require venting to assure sufficient cooling of the pump.
  -  **CAUTION:** During operation, the surface of the pump may reach temperatures exceeding 158°F {70 °C}. Be aware of the risk of burns! Assure that the LDP pump will not be touched inadvertently during operation. Provide signage and/or a guard as necessary.
- No heat sensitive materials (plastics, wood, cardboard, paper, electronics) may touch the surface of the pump while in operation mode.**
- Assure the sight glass of the pump's synchronizing oil sump remains accessible,** to allow for gear oil change when required. Assure that the drain port and the filling port of the synchronizing gear remain easily accessible.



- Check Synchronizing Gear Oil.** The LDP pump is supplied with oil in its synchronizing gear chamber. Before operation, check that the level is slightly above the middle of the sight glass. *See the Synchronizing Gear Oil Level Procedure, Filling and Replacement in the maintenance section of this User Manual.*

# Mechanical Installation of the LDP Pump



## CAUTION: Lifting

To avoid personal injury or damage to the pump, lift the pump using a forklift or hoist with straps that have been positioned under the pump's center of gravity.

Follow the conditions listed previously- and place the LDP pump into operating position. Movement of the pump is best accommodated by a fork lift truck, with forks inserted below the main frame of the pump. Carefully placed lifting straps are also suitable. Use of the center lifting hook is NOT advised for lifting the entire LDP assembly.

For installation convenience, ease of service and to assure no mechanical pressure is applied to the pump inlet, use a length of flexible hose for connection between the LDP vacuum inlet and the central dust collector or tubing.

The diameter of the inlet line/tubing/hose must match the specifications provided by Conair at the time of sale. In some cases, the vacuum line size may be larger and/or of a different construction (IE: aluminum) than the tubing provided for conveying material.



Common inlet line sizes, per model are:

Pump Model:	LDP Pump Inlet Inside Diameter:*
LDP-6	1.5" {38.1mm}
LDP-9	2.0" {50.8 mm}
LDP-11	2.25" {57.1 mm} or 2.5" {63.5 mm}
LDP-13	2.5" {63.5 mm} or 3.0" {76.2 mm}

\*Vacuum lines to receivers are occasionally upsized to minimize frictional vacuum loss on long vacuum line systems.

# Electrical Installation of the LDP Pump



## **WARNING: Electrical hazard**

Before performing maintenance or repairs on this product, disconnect and lock out electrical power sources to prevent injury from unexpected energization or start-up. A lockable device has been provided to isolate this product from potentially hazardous electricity.



## **WARNING: Improper installation, operation, or servicing may result in equipment damage or personal injury.**

This equipment should only be installed, adjusted, and serviced by qualified technical personnel who are familiar with the construction, operation, and potential hazards of this type of machine.

All wiring, disconnects, and fuses should be installed by qualified electrical technicians in accordance with electrical codes in your region. Always maintain a safe ground. Do not operate the equipment at power levels other than what is specified on the machine serial tag and data plate.

The LDP pump requires a minimum of three electrical connections:

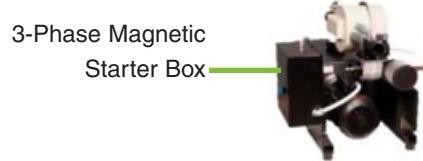
- 3-phase power for operation
- Low voltage pump start signal from the conveying system control
- Low voltage idle mode valve signal from the conveying system control

## 3-Phase Power Wiring

The LDP pump is equipped with a fully wired, 3-phase magnetic starter, installed on the pump assembly.



**NOTE:** Installation of a nearby fused disconnect switch (not supplied), dedicated to the LDP pump is recommended.



The supply voltage of the LDP was determined at the time of sale and supplied accordingly. Check the nameplate voltage and amperage of your specific model prior to beginning electrical installation. 3-phase power, including ground is connected directly to the LDP's starter box.

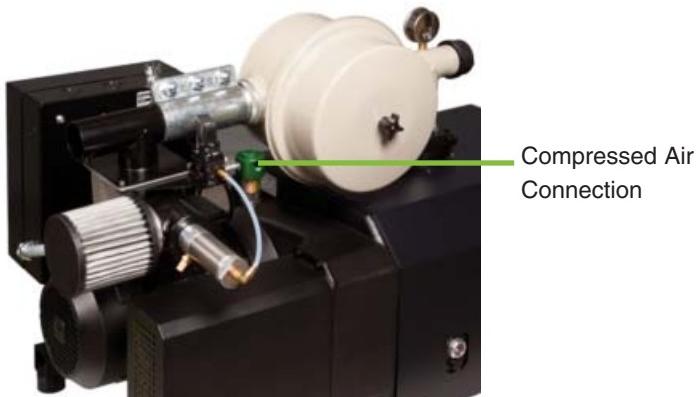
## Pump Start Signal Wiring

The pump start signal from the conveying system control (located elsewhere) will connect directly to the magnetic starter and typically integrates with the starter's overload circuitry for safe, overload protection. Follow the wiring directions included within the starter enclosure. Additionally, low voltage wires from the conveying system control will frequently be connected to signal the conveying system control in the event of a pump overload condition, to alert the operator. Refer to the conveying system control instructions for wiring details. Assure that the control voltage of the pump starter and the control system match. These are typically 24 VDC.

## Idle Mode Valve Wiring

The Idle mode valve is installed on the air inlet of the LDP pump and operates on compressed air via an electrical solenoid valve. This solenoid valve is pre-wired to a cable that must be spliced and extended back to the conveying system control, located elsewhere. Use of a common electrical junction box (not supplied) is recommended. Refer to the conveying system control instructions for wiring details. Assure that the control voltage of the idle mode valve solenoid and the control system match. These are typically 24 VDC.

## Compressed Air Installation



Compressed air is required for the operation of the Idle mode valve, installed on the air inlet of the LDP pump and equipped with a solenoid valve. Clean, moisture-free compressed air must be supplied directly to the solenoid valve body's NPT fitting. A flexible hose connection is recommended with enough slack to permit removal of the idle mode valve assembly for service. The hose connection must be routed to avoid touching the pump housing, which can become hot during operation.

**Specifications for the compressed air supply are:**

80 to 120 psi @ 1CFM {5.5 to 8.3 bar @ 1.7 m<sup>3</sup>/hr}



SECTION  
**4**

## Operation

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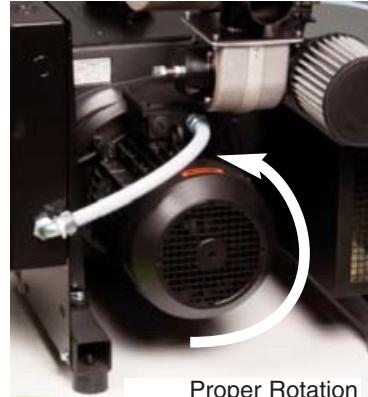
**4**  
Operation

## Check Rotation

Begin operation with a qualified electrician to determine if rotation is correct. The pump may be started for a short period of time by the conveying system control (see control operating manual) or by an electrician forcing a momentary start at the magnetic starter.

Proper operation may be confirmed by viewing the direction of the cooling fan of the drive motor, compared to the directional arrow on the housing. If rotation is correct, proceed to full commissioning of the pump.

If incorrect rotation is observed; Stop, disconnect and lock out 3-phase power and switch any two of the three phase leads at the pump starter or the disconnect switch (if supplied).



Proper Rotation

The LDP pump operates in response to the conveying system control (located elsewhere), and described in its own operation manual.



**NOTE:** The resin conveying system and its control determine how frequently the LDP pump is called upon to provide vacuum conveying power. The system control may be adjusted to serve the needs of conveying and balance that need with operation of the idle mode function so the pump does not start and stop any more often than necessary.

The LDP pump must be limited to no more than 12 starts per hour.

If system operation demands more than 12 starts per hour, refer to the conveying system control instructions and extend the idle mode time so the pump does not shut down as frequently, but continues to run in idle mode.



**CAUTION:** The LDP starts and stops without advance warning, in response to the operation of the central vacuum conveying system. Personnel in the vicinity of the pump should be alerted about sudden pump starts.

Operation is fully automatic once properly installed and commissioned and no operator intervention is required, but users should familiarize themselves with the conveying system operation by reading the control system manual.

# Maintenance

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## Warnings and Cautions

To maintain the best performance of the LDP, it must be cleaned and inspected regularly. Maintenance includes a daily, weekly, quarterly, and semi-annual (every 6 months) schedule.



**NOTE:** Maintenance intervals depend a great deal on the specific operating conditions of your operation and your conveying system. The following intervals should only be considered a starting reference which can be shortened or extended as appropriate. Particularly heavy operation, with high dust content loading (IE: powder conveying) can make it necessary to shorten the maintenance intervals significantly.

During any maintenance procedure, make sure that the pump is shut down and locked out against in-advertent start up.



**CAUTION:** During operation, the surface of the pump may reach temperatures exceeding 158°F {70 °C}. Be aware of the risk of burns!



### **WARNING: Voltage hazard**

This equipment is powered by alternating current, as specified on the machine serial tag and data plate. Do not operate the equipment at power levels other than what is specified on the machine serial tag and data plate.

A properly sized conductive ground wire from the incoming power supply must be connected to the chassis ground terminal inside the electrical enclosure. Improper grounding can result in severe personal injury and erratic machine operation.

Before performing maintenance or repairs on this product, disconnect and lock out electrical power sources to prevent injury from unexpected energization or start-up. A lockable device has been provided to isolate this product from potentially hazardous electricity.



### **WARNING: Improper Installation, operation, or servicing may result in equipment damage or personal injury.**

This equipment should only be installed, adjusted, and serviced by qualified technical personnel who are familiar with the construction, operation, and potential hazards of this type of machine.

All wiring, disconnects, and fuses should be installed by qualified electrical technicians in accordance with electrical codes in your region. Always maintain a safe ground. Do not operate the equipment at power levels other than what is specified on the machine serial tag and data plate.

# Preventative Maintenance Schedule

- Weekly
  - Check and clean the inlet air filters and replace as necessary.
  - Check and clean the inlet filter of the idle mode valve.
- Every Three Months
  - Check the level of the synchronizing gear oil. The level should be slightly above the middle of the sight glass and should stay at that level over the life-time of the oil.
- Semi-annual (every six months)
  - Clean the pump housing:
  - Check the idle mode valve seals
- Every Year
  - Clean or replace the inlet air screen on the inlet to the pump.
  - Remove and clean the filter bowl on the compressed air line.
- Every 20,000 Operating Hours or after 6 Years of normal service
  - Change the synchronizing gear oil.

## Filter Cleaning Instructions

Filter cleaning procedure for primary filter:

- 1 Take care not to lose any fasteners.
- 2 With the pump turned off, unscrew the black hand knob on the filter housing and slide the filter cover away from the filter housing.



- 3 Remove the wing nut and cartridge filter from the threaded rod mounting and clean thoroughly with a vacuum cleaner, applied to the outside of the filter. If using compressed air to clean, be sure to wear eye protection and blow from the inside of the cartridge out. The filter cannot be washed.



Inspect the filter for tears, leaks, blinded filter media, and a bent or distorted filter base. Do not attempt to patch or repair a damaged filter, but replace it with a new filter cartridge.

- 4 Replace the filter after cleaning and assure that a firm and continuous seal is made around the base of the filter while tightening the securing nut accordingly. Do not crush the filter by over-tightening.
- 5 Replace the filter cover and tighten the black hand knob.

# Filter Cleaning Instructions (continued)

Filter cleaning procedure for idle mode valve filter:

- 1 The filter may be cleaned thoroughly with a vacuum cleaner, applied to the outside of the filter, without removing the filter.**

If using compressed air to clean the filter it must be removed from the assembly.

- 1** The filter is secured to its base by a hose clamp. **Loosen the hose clamp** enough to slide the filter off the base.
- 2 Be sure to wear eye protection and blow from the inside of the cartridge out.**
- 3 The filter cannot be washed.**
- 4 Inspect the filter for tears, leaks, blinded filter media, and a damaged filter base. Do not attempt to patch or repair a damaged filter, but replace it with a new filter cartridge.**
- 5 Reinstall the filter after cleaning** and assure that a firm and continuous seal is made around the base of the filter while tightening the hose clamp.

## Checking the Level of the Synchronizing Gear Oil

 **NOTE:** If the oil level has dropped, the gear housing is leaking and requires special technical servicing. Contact Conair Customer Service 1 800 458 1960. From outside of the United States, call: 814 437 6861.

The level should be slightly above the middle of the sight glass and should stay at that level over the life-time of the oil.

- 1 Drain the compressed air filter bowl on the idle mode valve.** The compressed air supplied to the idle mode valve is filtered to eliminate moisture that may foul the operation of the idle mode pneumatics. The filter needs to be drained of collected moisture. **Draining can typically be accomplished by simple pushing, turning, or bending (depending one filter type) the drain valve on the bottom of the clear filter bowl** and allowing the compressed air supply to blow moisture out of the system.
- 2 To avoid spraying collected moisture onto the LDP pump or near-by components, place a container or tray below the filter** before triggering the release valve, and be aware of the force of the air supply as it is exhausted.

 **NOTE:** Like all maintenance procedures, the frequency of moisture draining can be shortened or lengthened, based on operating conditions (IE: the amount of moisture in the air line).

# Cleaning the Pump Housing

- 1** Since the LDP partially depends upon its own housing to disperse the heat of compression, **make sure that the housing is free from dust and dirt and clean as necessary.**
- 2** Remove the acoustic enclosure from the pump assembly and clean the pump modules below. Use common water and degreaser as necessary.
- 3** Carefully wipe off cleaning residue before finishing to assure good heat transfer through the housing to the surrounding air.
- 4** Clean the fan cowlings, fan wheels, the ventilation grilles, and cooling fins.
- 5** Remount the acoustic enclosure.



**NOTE:** Make sure that the internal foam does not get soaked with water.

## Checking the Idle Mode Valve Seals

Check the idle mode valve seals by carefully observing normal operation of the valve: Observe the vacuum guage of the pump and compare to normal operation for this pump.



Idle Mode Valve

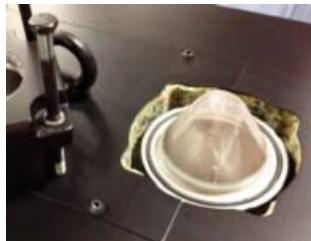
### Idle Mode Valve closed during conveying:

The valve seal should not hiss or whistle, nor pass air into the valve which would indicate leakage of the valve seal. The vacuum guage should indicate full vacuum power. If leaking is observed or heard, or the guage indicates a vacuum loss during normal conveying idle, the Idle Mode Valve seals should be carefully inspected for damage or misalignment. *Refer to the Troubleshooting section of this User Guide for repair procedures.*

### Idle Mode Valve open during idle mode operation:

The valve should be fully retracted, allowing full vacuum to pass through the valve and enter the pump through the valve's coarse screen inlet. Vacuum level reading should be near zero. If the reading is measureable or the pump sounds like it is still under vacuum load, the valve operation is faulty and is not fully retracting. *Refer to the Troubleshooting section of this User Guide for repair procedures.*

## Cleaning or Replacing the Inlet Air Screen on the Inlet to the Pump



Filter Screen Within the Vacuum Inlet to the Pump

### Access to inlet screen:

After the pump is shut down, locked out, and allowed to cool sufficiently for touch, remove the vacuum inlet hose. Loosen the inlet filter pipe stub nut and rotate the filter housing to remove it completely from the pump assembly. The inlet filter screen is not visible in the top of the pump's machined housing and may be removed for inspection.



**NOTE:** The inlet screen should not show soiling since the primary, cartridge filter catches most dust and fines and protects the pump. A soiled inlet screen indicates that the primary filter is either damaged or improperly installed.

Take appropriate action to:

- 1 Clean, repair, or replace the primary filter and/or housing.**
- 2 Determine if the system's dust collector is in satisfactory working order.**
- 3 Review filter removal, cleaning, and replacement procedures for both the system dust collector (in a separate manual) and the LDP primary filter with appropriate personnel.**

## Removing and Cleaning the Filter Bowl on the Compressed Air Line

In addition to regular draining, the filter bowl should be carefully examined and cleaned each year so that moisture levels can be observed and the condition of the filter media can be examined.

- 1 Disconnect the air supply and rotate the filter bowl to unscrew, remove and clean it.** If the filter media inside the bowl is darkened, it should be replaced.
- 2 Once clean and/or replaced, remount the filter bowl and re-connect the compressed air supply.**

# Synchronizing Gear Oil Change Procedure

- 1** After the pump is shut down, locked out, and allowed to cool sufficiently for touch, **remove the vacuum inlet hose.**
- 2** Loosen the inlet filter pipe stub nut and rotate the filter housing to the side.
- 3** Remove the lifting eyebolt and remove the cover.
- 4** Open the venting valve to allow the oil to drain. Place a drain pan underneath the drain plug and **open the drain plug.** Drain the oil into the pan. Make sure that the seal ring on the drain plug is intact and replace if necessary.
- 5** After draining is complete, firmly reinstall the drain plug with the seal ring.
- 6** Remove the venting valve from the housing and fill the synchronizing gear case with new gear oil (see specifications, below) until the level is slightly above the middle of the sight glass. Make sure that the seal ring on the venting valve is undamaged and replace if necessary.
- 7** Once filling is complete, replace the venting valve, together with the seal ring. Re-mount the cover, re-insert the eyebolt, swing the filter inlet back into line, and tighten its locking nut.
- 8** Reinstall the vacuum inlet hose onto the filter housing.
- 9** Dispose of the used oil in compliance with applicable regulations. The LDP pump is ready to be returned to service.

## Synchronizing Gear Oil Specifications:

LDP Pump Model:	Recommended Gear Oil
LDP-6	Busch R550
LDP-9	Busch R550
LDP-11	Busch R550
LDP-13	Busch VS220

Use of alternative gear oils require more frequent oil changes.



# Troubleshooting

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# Before Beginning

You can avoid most problems by following the recommended installation, operation and maintenance procedures outlined in this User Guide. If you have a problem, this section will help you determine the cause and tell you how to fix it.

Before you begin troubleshooting:

- ❑ Find any wiring, parts, and assembly diagrams that were shipped with your equipment. These are the best reference for correcting a problem. The diagrams will note any custom features or options not covered in this User Guide.
- ❑ Verify that you have all instructional materials related to the LDP. Additional details about troubleshooting and repairing specific components are found in these materials.
- ❑ Check that you have manual for other equipment connected in the system. Troubleshooting may require investigating other equipment attached to, or connected with the LDP.

## A Few Words of Caution



### **WARNING: Improper installation, operation or servicing may result in equipment damage or personal injury.**

This equipment should only be installed, adjusted, and serviced by qualified technical personnel who are familiar with the construction, operation, and potential hazards of this type of machine.

All wiring, disconnects, and fuses should be installed and adjusted by qualified electrical technicians in accordance with electrical codes in your region. Always maintain a safe ground. Do not operate the equipment at power levels other than what is specified on the machine serial tag and data plate.



### **WARNING: Electrical hazard**



Before performing maintenance or repairs on this product, disconnect and lock out electrical power sources to prevent injury from unexpected energization or start-up. A lockable device has been provided to isolate this product from potentially hazardous electricity.

# LDP Operation Problems

Problem	Possible Cause	Solution
The vacuum pump does not reach the usual pressure.	The vacuum line system is not leak-tight.	Check hose and tubing connections throughout the system for leaks at couplers and stubs.
	Primary filter or internal filter are partially clogged.	Perform routine filter cleaning, replacement or maintenance to clear the air path to the pump.
	Vacuum receiver valves are not closing properly, preventing other receivers from loading properly.	Systematically check each receiver that is connected to the pump and assure its vacuum valve closes firmly when it is not loading. No air should flow through the valve when it is closed. <i>Refer to the vacuum receiver instructions.</i>
	Internal pump parts are worn or damaged.	Repair the vacuum pump (Contact Conair Service).
	The valve disk of the inlet non-return valve is stuck in the closed or partially open position.	Disassemble the inlet, clean the screen and the valve as required and re-assemble.
	Idle mode valve is not receiving proper signal from conveying system control.	Check conveying system control operation. <i>Refer to control instructions.</i> Check wiring between control and pump.
	Idle mode valve is not closing fully. Malfunction of solenoid or internal plunger.	Repair/replace idle mode valve solenoid. Repair/replace idle mode valve plunger.

# LDP Operation Problems

Problem	Possible Cause	Solution
The vacuum pump does not start.	<p>The pump starter is not supplied with the correct voltage or is overloaded.</p> <p>The drive motor starter overload protection is set too low.</p>	<p>Check nameplate and assure correct voltage is supplied. Reset overloads.</p> <p>Compare the trip level of the drive motor starter overload protection with the amperage data on the nameplate, correct as necessary.</p>
	<p>One or more fuses at the pump's 3-phase disconnect switch have blown.</p> <p>The vacuum pump or the drive motor is blocked.</p>	<p>In case of high ambient temperature: set the trip level of the drive motor starter overload protection 5 percent above the nominal drive motor current.</p> <p>Check for cause of blown fuse and replace fuse(s).</p> <p>Disconnect and lock out power to the pump and remove the motor fan cover. Try to turn the drive motor and the vacuum pump by hand. If the unit is still frozen: remove the drive motor and check the drive motor and the vacuum pump separately. If the vacuum pump is blocked, repair the vacuum pump (contact Conair Service). If the drive motor is frozen, remove and replace the motor.</p>
The vacuum pump starts, but labors or runs noisily or rattles; The drive motor draws too much current (compared to amperage readings at initial start-up).	<p>Loose connection(s) in the drive motor terminal box.</p> <p>Not all legs of the 3-phase supply are properly connected. The drive motor is operating on only two phases.</p>	<p>Tighten or rework loose connections.</p> <p>Check the for proper connection of the wires in the starter box and in the fused disconnect switch (if supplied). Continue by checking supply voltage. Continue further by checking wiring at the motor itself.</p>

# LDP Operation Problems

Problem	Possible Cause	Solution
The vacuum pump starts, but labors or runs noisily or rattles; The drive motor draws too much current (compared to amperage readings at initial start-up). [Cont]	The vacuum pump is running in the wrong direction, due to out of phase connection of the incoming power wiring. The drive motor starter overload protection is set too low.	<i>Refer to the Operation Section of this User Guide for determining and correcting proper phase/motor rotation.</i>
The pump operates, but generates a great deal of noise.	Defective pump bearings  Worn coupling element between pump and motor.  Low oil level in synchronizing gear box-visible on sight glass.  Synchronizing gear damaged, due to low oil level.	Pump repair required. Contact Conair Service.  Replace the coupling element.  Pump repair required. Contact Conair Service.  Pump repair required. Contact Conair Service.
The pump operates, but very hot.	Insufficient air ventilation, due to dust and dirt.  Insufficient air ventilation, due to proximity to walls or poor room ventilation.  Conveying air temperature too high. Elevated air temperature introduced into the vacuum system by dry air conveying system.  Partial clogging of the dust collector, primary inlet filter or inlet filter screen.  Blockage of discharge line of pump.  Vacuum line too long or too small of a diameter.	Clean the fan cowling, fan wheel ventilation grills and cooling fins.  <i>See "Operating Conditions-environment, 2 through 4" in the Installation Section of this User Guide.</i>  <i>See "Vacuum air inlet temperature" in the Introduction Section of this User Guide for guidelines.</i> Install inlet air heat exchanger.  Clean accordingly. Keep clean through periodic maintenance.  Remove blockage and/or allow pump to discharge air without restriction.  System design flaw. Contact Conair for re-engineering.



# We're Here to Help

Conair has made the largest investment in customer support in the plastics industry. Our service experts are available to help with any problem you might have installing and operating your equipment. Your Conair sales representative also can help analyze the nature of your problem, assuring that it did not result from misapplication or improper use.

## How to Contact Customer Service

To contact Customer Service personnel, call:



**NOTE:** Normal operating hours are 8:00 am - 5:00 pm EST. After hours emergency service is available at the same phone number.

**From outside the United States, call: 814-437-6861**

You can commission Conair service personnel to provide on-site service by contacting the Customer Service Department. Standard rates include an on-site hourly rate, with a one-day minimum plus expenses.

**Additional manuals and prints for your Conair equipment may be ordered through the Customer Service or Parts Department for a nominal fee. Most manuals can be downloaded free of charge from the product section of the Conair website.**

[www.conairgroup.com](http://www.conairgroup.com)

## Before You Call...

**If you do have a problem, please complete the following checklist before calling Conair:**

- Make sure you have all model, control type from the serial tag, and parts list numbers for your particular equipment. Service personnel will need this information to assist you.
- Make sure power is supplied to the equipment.
- Make sure that all connectors and wires within and between control systems and related components have been installed correctly.
- Check the troubleshooting guide of this manual for a solution.
- Thoroughly examine the instruction manual(s) for associated equipment, especially controls. Each manual may have its own troubleshooting guide to help you.
- Check that the equipment has been operated as described in this manual.
- Check accompanying schematic drawings for information on special considerations.

## **Equipment Guarantee**

Conair guarantees the machinery and equipment on this order, for a period as defined in the quotation from date of shipment, against defects in material and workmanship under the normal use and service for which it was recommended (except for parts that are typically replaced after normal usage, such as filters, liner plates, etc.). Conair's guarantee is limited to replacing, at our option, the part or parts determined by us to be defective after examination. The customer assumes the cost of transportation of the part or parts to and from the factory.

## **Performance Warranty**

Conair warrants that this equipment will perform at or above the ratings stated in specific quotations covering the equipment or as detailed in engineering specifications, provided the equipment is applied, installed, operated and maintained in the recommended manner as outlined in our quotation or specifications.

Should performance not meet warranted levels, Conair at its discretion will exercise one of the following options:

- Inspect the equipment and perform alterations or adjustments to satisfy performance claims. (Charges for such inspections and corrections will be waived unless failure to meet warranty is due to misapplication, improper installation, poor maintenance practices or improper operation.)
- Replace the original equipment with other Conair equipment that will meet original performance claims at no extra cost to the customer.
- Refund the invoiced cost to the customer. Credit is subject to prior notice by the customer at which time a Return Goods Authorization Number (RGA) will be issued by Conair's Service Department. Returned equipment must be well crated and in proper operating condition, including all parts. Returns must be prepaid.

Purchaser must notify Conair in writing of any claim and provide a customer receipt and other evidence that a claim is being made.

## **Warranty Limitations**

**Except for the Equipment Guarantee and Performance Warranty stated above, Conair disclaims all other warranties with respect to the equipment, express or implied, arising by operation of law, course of dealing, usage of trade or otherwise, including but not limited to the implied warranties of merchantability and fitness for a particular purpose.**